Read This First

Getting Started

With Your Macintosh Quadra 950

Includes setup instructions and important health-related information

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Important

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission: *Interference Handbook* (stock number 004-000-00345-4). This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

△ **Important:** Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radios, television sets, and other electronic devices. For Apple peripheral devices, you can obtain the proper shielded cables from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance. △

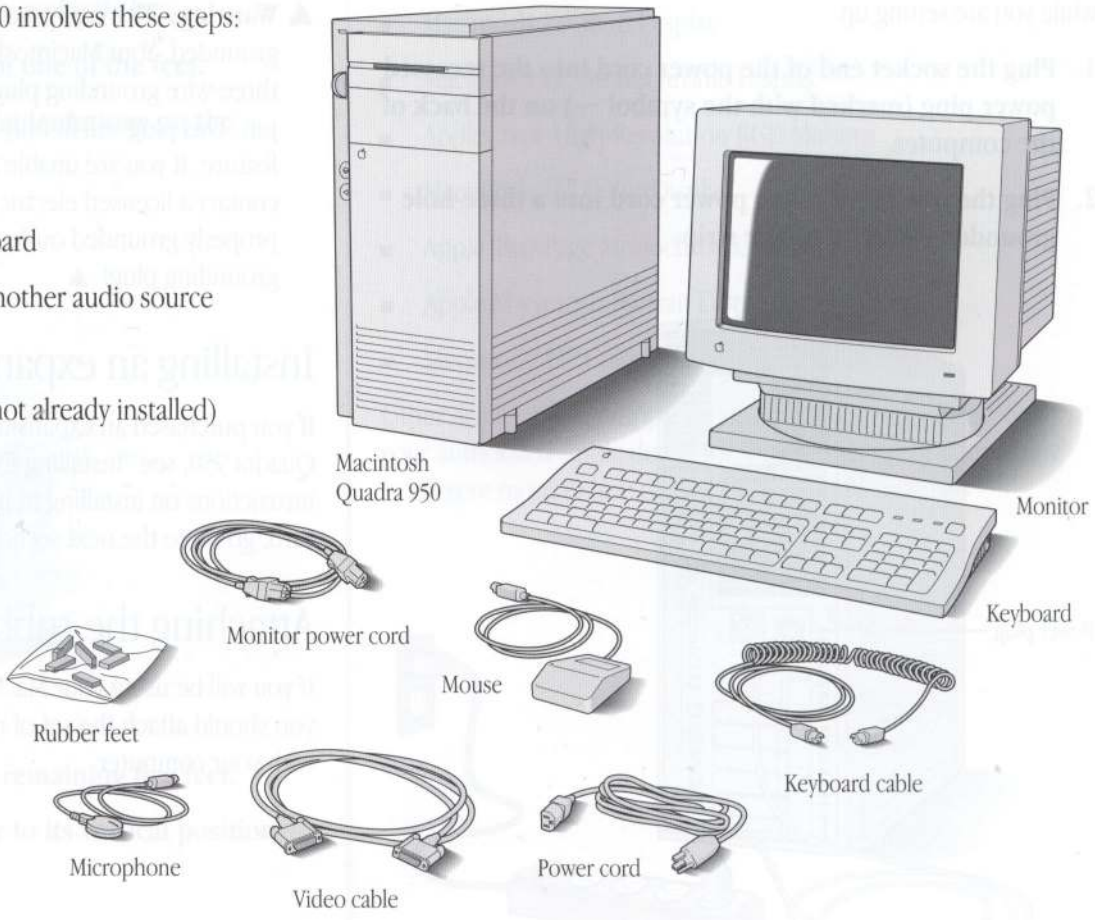
DOC Class B Compliance This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the radio interference regulations of the Canadian Department of Communications.

Observation des normes—Classe B Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe B prescrites dans les règlements sur le brouillage radioélectrique édictés par le Ministère des Communications du Canada.

Setting Up

Setting up your Macintosh Quadra 950 involves these steps:

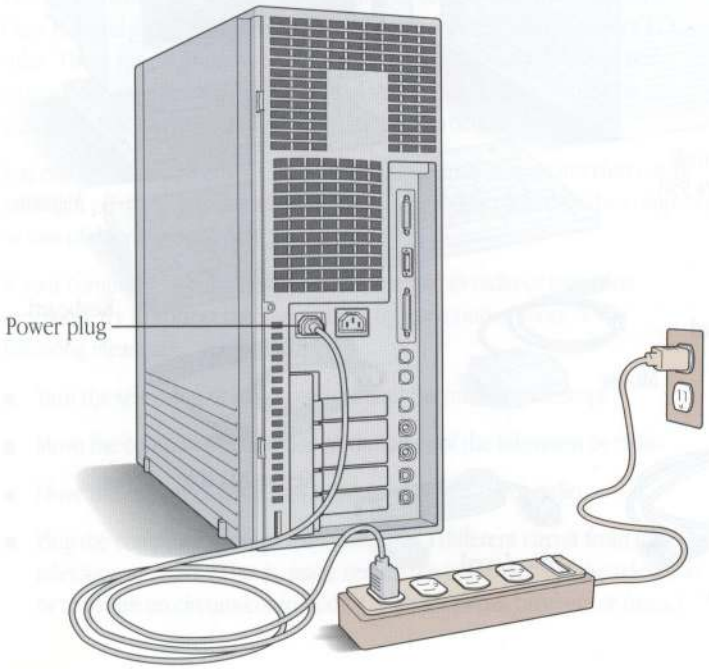
- Plugging in the computer
- Attaching the rubber feet
- Connecting a monitor
- Connecting the mouse and keyboard
- Connecting the microphone or another audio source
- Turning your computer on
- Installing system software (if it's not already installed)



Plugging in the computer

Plug in the Macintosh before connecting anything to it. This grounds the computer and protects it from electrical damage while you are setting up.

1. **Plug the socket end of the power cord into the recessed power plug (marked with the symbol ~) on the back of the computer.**
2. **Plug the other end of the power cord into a three-hole grounded outlet or power strip.**



To protect both yourself and the computer from electrical hazards, leave the computer turned off until you are finished connecting its parts.

▲ **Warning:** This equipment is intended to be electrically grounded. Your Macintosh Quadra 950 is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug! ▲

Installing an expansion card

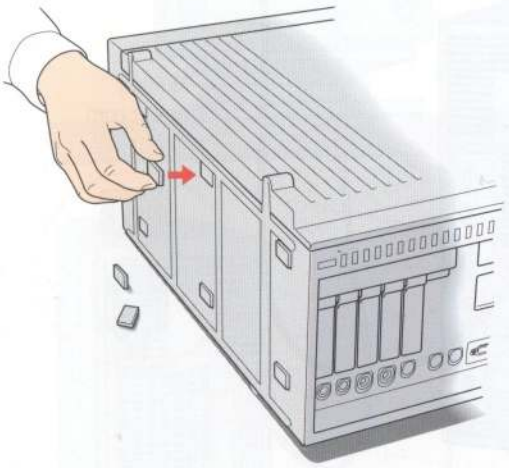
If you purchased an expansion card for your Macintosh Quadra 950, see "Installing Expansion Cards," page 27, for instructions on installing it. If you don't have an expansion card, go on to the next section, "Attaching the Rubber Feet."

Attaching the rubber feet

If you will be using your Macintosh Quadra 950 on a hard surface, you should attach the set of rectangular rubber feet that came with your computer.

To attach the rubber feet:

1. **Carefully turn the computer flat on its left side (as you face the front of the computer).**
2. **Remove the set of feet from their plastic bag.**
3. **Peel the adhesive backing from one of the feet.**
4. **Place the foot into one of the indentations on the bottom of the computer.**



5. **Repeat this procedure for the remaining five feet.**
6. **Carefully return the computer to its vertical position.**

Connecting a monitor

The Macintosh Quadra 950 provides built-in video support for the following Apple monitors:

- Macintosh 12" RGB Display
- Macintosh 12" Monochrome Display
- AppleColor High-Resolution RGB Monitor
- Macintosh 16" Color Display
- Apple Two-Page Monochrome Monitor
- Apple Macintosh Portrait Display
- Macintosh 21" Color Display

Other Apple and non-Apple monitors are also supported. See your authorized Apple dealer for details. (If you are connecting a different monitor, see the instructions in its manual.)

To connect any of the monitors listed above:

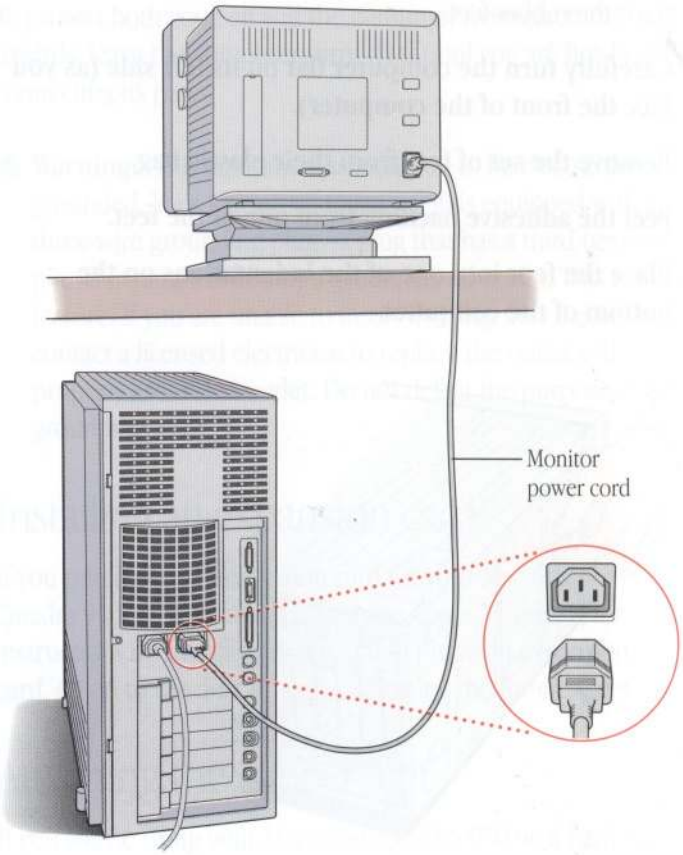
1. **Place the monitor where you will be using it.**

   Keep in mind these considerations:

   - Arrange the monitor so the top of the screen is slightly below eye level when you're sitting at the keyboard.
   - Position the monitor to minimize glare and reflections on the screen from overhead lights and windows.
   - Allow a few inches for air circulation around the computer and monitor.

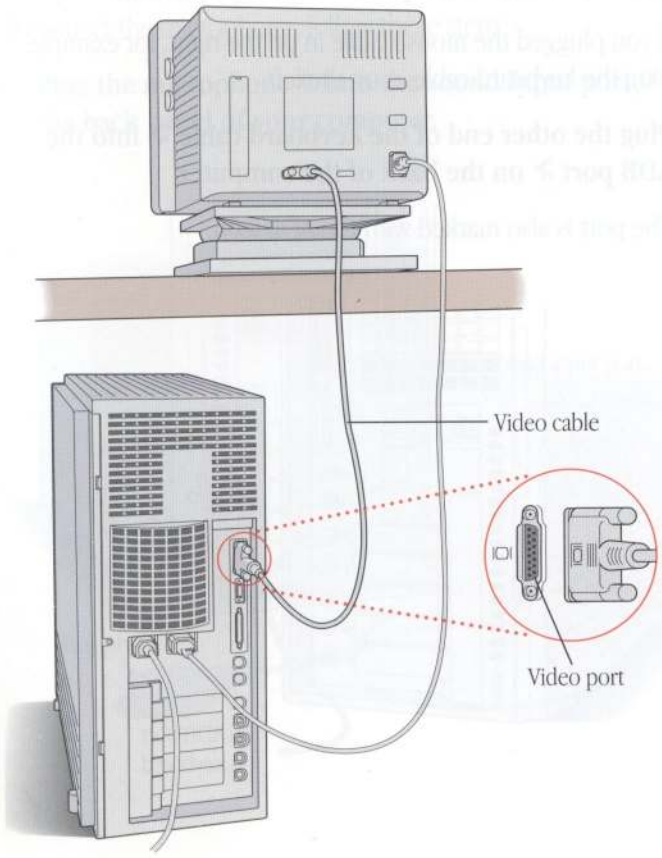
2. **Attach the monitor power cord.**

   Connect the free end of the cord to the socket (marked with the symbol ~) on the computer. (If your monitor is the Macintosh 12" RGB Display, connect the free end of the cord to a grounded power outlet.)

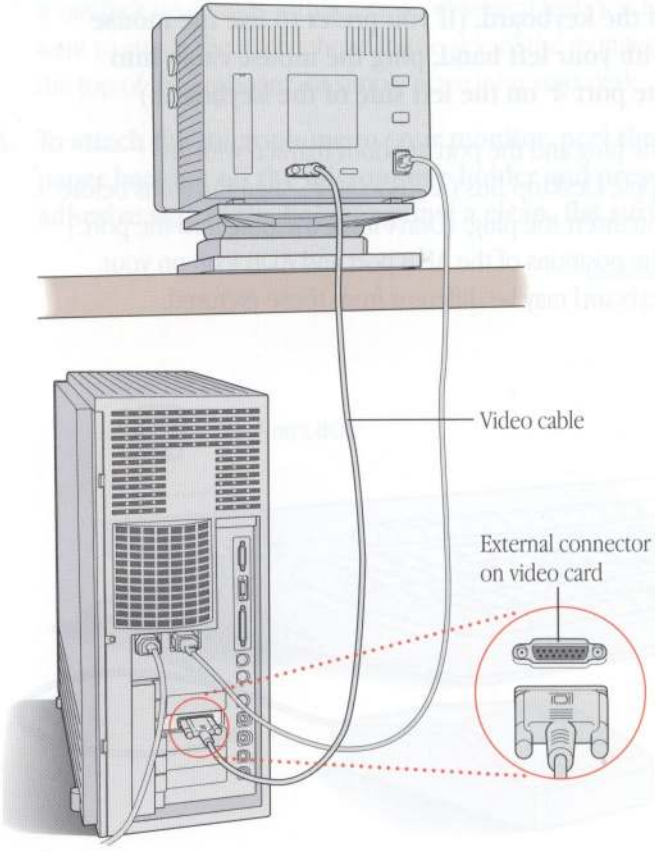


3. **Attach the video cable and tighten the thumbscrews.**

Connect the free end of the cable to the video port on the computer.



If you are connecting the monitor to a video expansion card, plug the video cable into the external connector on the card, rather than into the video port.

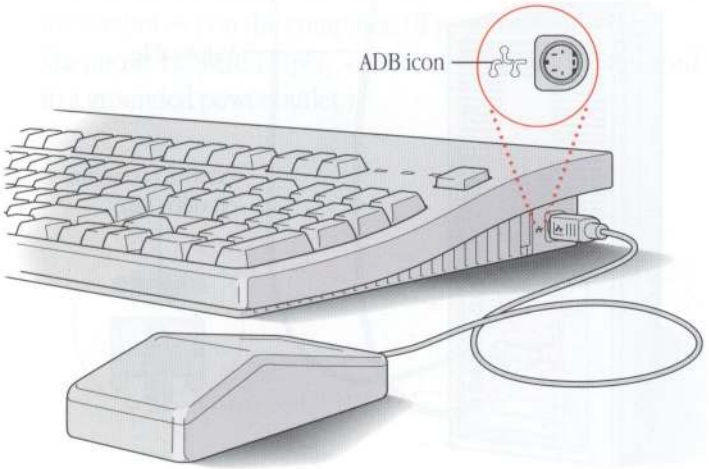


Connecting the mouse and keyboard

Follow these steps to connect the mouse and keyboard:

1. **Plug the mouse cable into the port ⌘ on the right side of the keyboard. (If you prefer to use the mouse with your left hand, plug the mouse cable into the port ⌘ on the left side of the keyboard.)**

   The plug and the port are both marked with an Apple Desktop Bus (ADB) icon ⌘. Align the icons before you insert the plug. (Don't force the plug into the port.) The positions of the ADB port and ADB icon on your keyboard may be different from those pictured.



2. **Find the long keyboard cable that came in your Macintosh Quadra 950 box.**

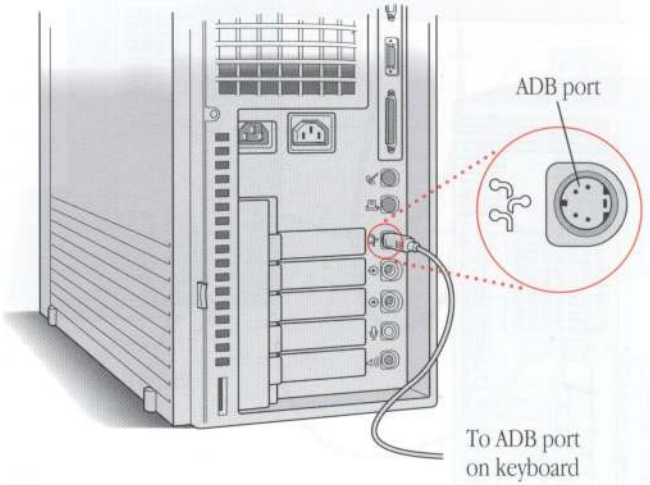
   You don't need the short cable provided in the keyboard box.

3. **Plug one end of the keyboard cable—both ends are the same—into the other port ⌘ on the keyboard.**

   If you plugged the mouse cable in on the right, for example, plug the keyboard cable in on the left.

4. **Plug the other end of the keyboard cable ⌘ into the ADB port ⌘ on the back of the computer.**

   The port is also marked with the ADB icon.

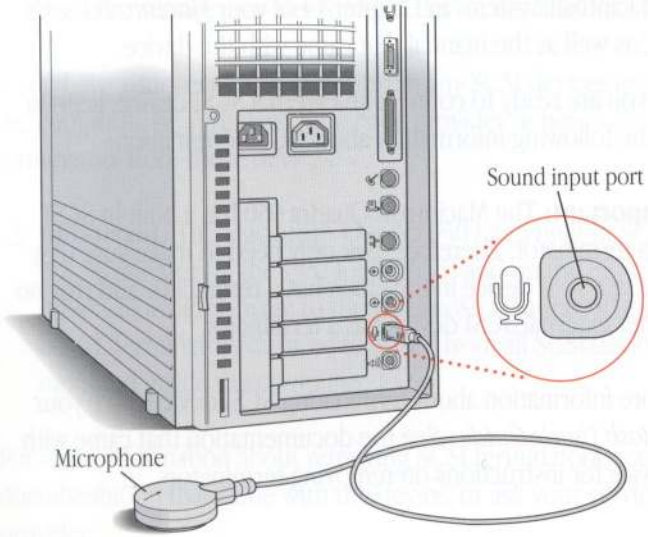


Connecting the microphone

The Macintosh Quadra 950 comes with a microphone that you can use to record live sounds. If you want to record sounds from another audio source, see "Connecting Another Audio Source," page 31, in the "Technical Information" section.

To connect the microphone, follow these steps:

1. **Plug the microphone into the sound input port on the back panel of your computer.**



2. **Decide where you want to place the microphone.**

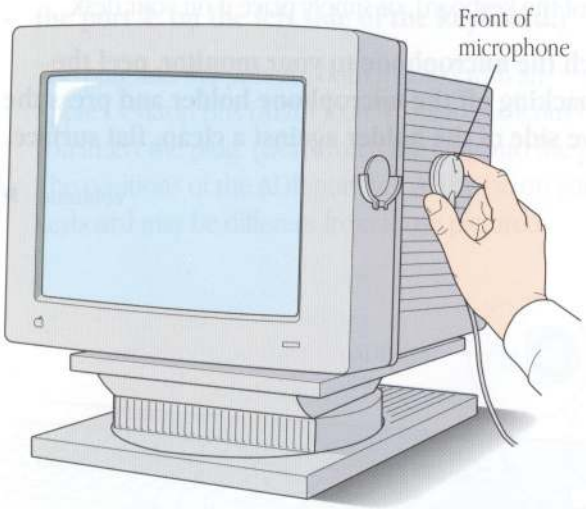
   The microphone that comes with your computer is highly sensitive. Once you've turned it on (which you do with the Sound control panel or with a sound-recording program), it can pick up sounds within a range of several feet. You may want to attach the microphone to the side of the monitor or the top of the keyboard, or simply place it on your desk.

3. **To attach the microphone to your monitor, peel the paper backing off the microphone holder and press the adhesive side of the holder against a clean, flat surface.**

continues ▶

4. **Place the microphone in the holder.**

The microphone is ready to use. There is no on/off switch on the microphone. The microphone is controlled by the program you use to record sounds. (For more information on using the microphone, see your *Macintosh User's Guide.*)



Connecting other devices

You may have purchased other devices that you want to connect to your Macintosh Quadra 950, such as a disk drive or printer. This section directs you to the procedures for connecting external and internal devices.

External devices

If you purchased a hard disk or other SCSI device to use with your Macintosh Quadra 950, follow the instructions for "Expanding Your Macintosh System" in Chapter 14 of your *Macintosh User's Guide*, as well as the manual that came with the device.

When you are ready to connect an external SCSI device, keep in mind the following information about SCSI termination:

△ **Important:** The Macintosh Quadra 950 has a built-in SCSI bus terminator. Therefore, you only need to make sure that the last SCSI device in the chain has a terminator and that no other external SCSI device has a terminator. △

For more information about terminating SCSI devices, see your *Macintosh User's Guide*. See the documentation that came with the device for instructions on removing terminators.

Internal devices

The Macintosh Quadra 950 has internal storage capability for up to four drives, including a floppy disk drive, a CD-ROM drive, and internal hard disk drives (several capacities available). See your Apple dealer for details on configuring your Macintosh Quadra 950.

▲ **Warning:** Attempting to install an internal SCSI device yourself may void the limited warranty. Incorrect installation can damage the logic board. See your authorized Apple dealer or service provider for SCSI device installations. ▲

If you have your service provider install any SCSI devices inside the computer, be sure that the service provider removes all terminators from those devices.

△ **Important:** The Macintosh Quadra 950 has a built-in SCSI bus terminator on the CPU logic board and on the SCSI bus cable. To avoid damage to the Macintosh Quadra 950 logic board, terminators must be removed from all SCSI devices mounted inside the computer. △

For more information about removing SCSI terminators, see the documentation that came with the device, or ask your service provider.

There is an easy way to check the SCSI ID number of devices that are connected to your computer. To check the SCSI ID number of a device, first click the icon of the device to select it, then choose Get Info from the File menu. The ID number is listed in the "Where" section after the name of the device.

Turning the computer on

Turning on the computer is a two-step process. You need to turn on the monitor and the computer separately.

1. **Turn on the monitor.**

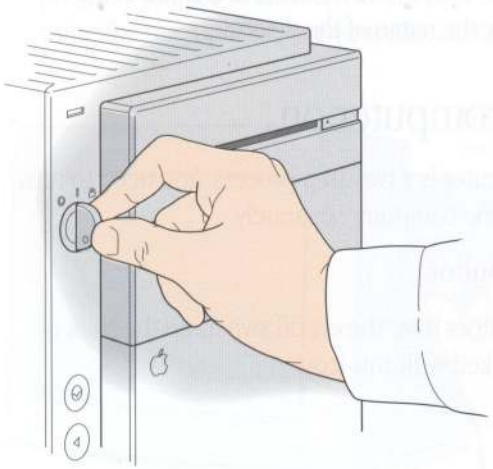
   Most Apple monitors have the on/off switch on the back of the monitor, marked with this icon:

❖ *By the way:* You only need to turn on the monitor once. From now on, the monitor will turn off automatically when you shut down the computer, and it will turn on automatically when you start up the computer. (The Macintosh 12" RGB Display is an exception; it must be turned on separately each time you turn on the computer.) ❖

continues ▶

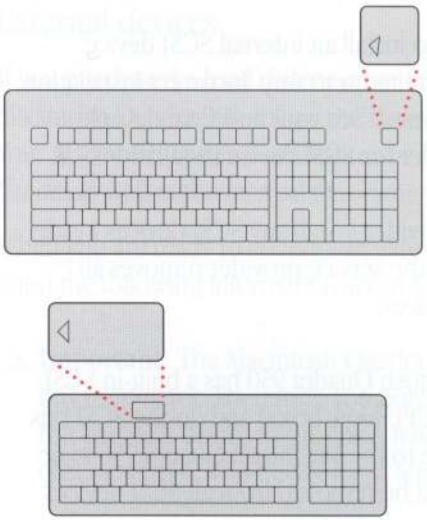
2. **Turn the key lock to the On position.**

   The On position is labeled with this symbol: |



3. **Turn on your computer by pressing the Power On key ◁.**

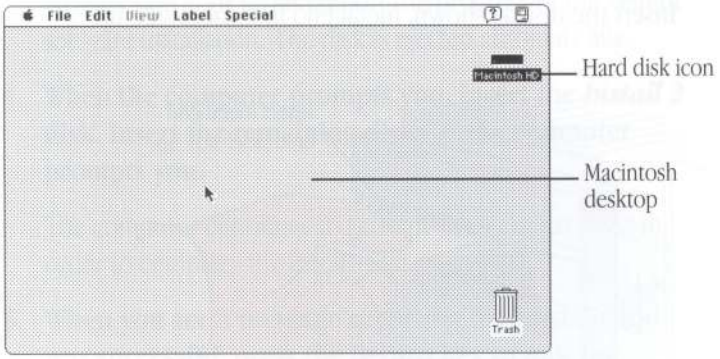
   Depending on the type of keyboard you have, you'll find the Power On key in either the top-right corner or top center of the keyboard.



What you see after you turn on your computer depends on whether or not system software has already been installed on your hard disk.

If you see the Macintosh desktop

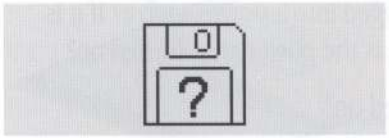
If you see the Macintosh desktop with a hard disk icon near the top-right corner of your screen, then system software has already been installed.



This means that your computer is ready to use. Turn to "Health Concerns Associated With Computer Use."

If you see a blinking question mark

If you see a blinking question mark on your screen, then you need to install system software on the hard disk. Go on to "Installing System Software."



Problems starting up?

If you don't see anything on the screen, check these items to see if you can identify the problem.

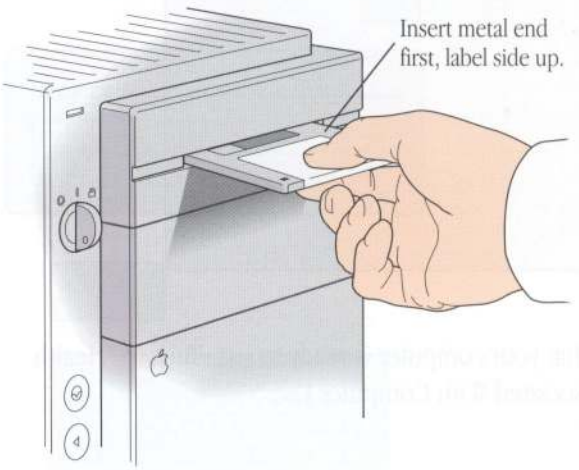
- Is the key lock in the On (|) position?
- Is the computer firmly plugged into a power source? If it is plugged into a power strip, is the power strip turned on?
- Is the computer itself turned on?
- Is the keyboard cable connected correctly? (Don't disconnect the keyboard cable while your computer is on. You could damage your equipment.)
- Is the monitor power cord plugged in?
- Is the monitor's video cable attached firmly to the computer?
- Is the brightness control on the monitor adjusted correctly?
- Is the monitor turned on?

Installing system software

To install system software on your hard disk:

1. **Find the *Install 1* disk provided with your computer. Insert the disk into the floppy disk drive.**

   Insert the disk as shown, metal end first, label side up.



   After a few moments, you see the Welcome box of the Installer, the program that installs system software on your hard disk.

2. **Press the Return key on your keyboard to continue.**

   The Easy Install screen appears. Easy Install puts everything on your hard disk that you need to get started.

3. **Press the Return key to start to install system software.**

   Messages on your screen report the progress of the system software installation. The disk is ejected automatically.

4. **When the computer prompts you, insert the *Install 2* disk. Insert the remaining disks as the computer prompts you.**

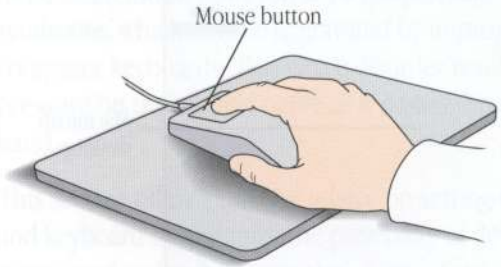
   The computer continues to prompt you to insert disks in order to complete the installation process.

5. **When you see a message reporting that installation was successful, press the Return key to quit the Installer program. (If you see a message saying that installation was not successful, you will need to begin the process again.)**

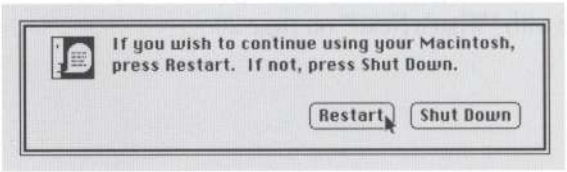
   Now you see a box that asks whether you want to continue using your Macintosh. To continue working or to learn how to use your Macintosh, you should choose Restart.

6. **Click the word Restart.**

   - Hold the mouse as shown, cable pointing away from you.



   Move the mouse on a flat surface. Slide it so that it stays in contact with the tabletop. Notice that the arrow on the screen moves in the direction that you move the mouse. (If the arrow does not move on the screen, make sure that the cable connecting the mouse to the keyboard is secure.) Move the mouse so that the arrow rests over the word Restart.



   - Press and release the mouse button.

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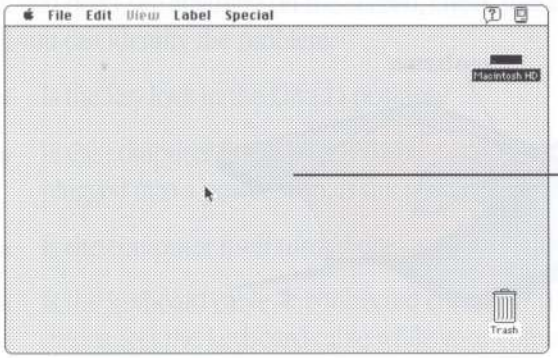
Now you should see the Macintosh desktop.



If you don't see the desktop, try clicking the word Restart again, making sure that the tip of the arrow is inside the border around the word Restart.

You've finished setting up your Macintosh Quadra 950. Read the next few sections to learn about some health concerns related to computer use and safety guidelines for using your computer. Then continue with "What's Next?" on page 20.

Health concerns associated with computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can actually occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer's keyboard improperly, you may increase your likelihood of developing wrist problems. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We'll discuss each area of concern below.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully (using the guidelines that follow) and take frequent breaks to rest tired muscles.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to an awkward posture, such factors as the amount of repetition, the force used in the activity, and the individual's physiology and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two well-known RSIs that have been with us for a long time. One RSI discussed more often today, however, is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers extensive advice on setting up your desk, chair, and keyboard to minimize the possibility of developing an RSI. As mentioned earlier, however, the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, so proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward, inappropriate working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest and refresh.

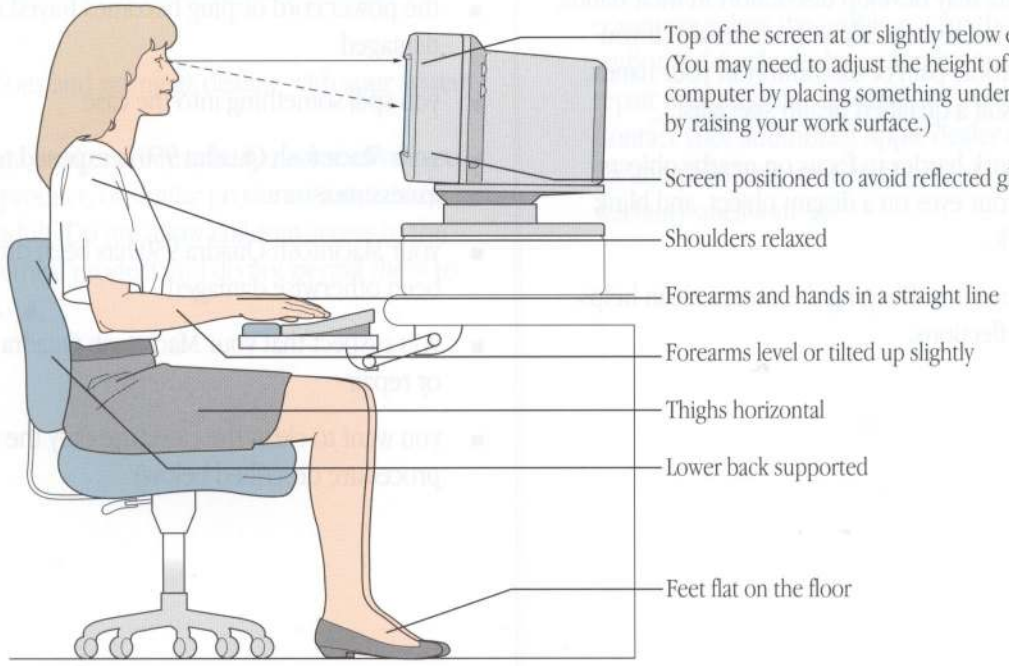
The suggestions that follow will make your work more comfortable.

Arranging your office

Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal, your feet flat on the floor, and the backs of your knees slightly higher than the seat of your chair.
- The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form a right angle, with your wrist and hand in roughly a straight line.
- You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest to make up for any gap between the floor and your feet. As an alternative, if you have a modular desk system, you can lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- If you use a mouse, position the mouse at the same height as your keyboard. When you slide the mouse around, move your entire arm; avoid resting your arm on the desk and simply bending your wrist as you move the mouse.
- Arrange the monitor so the top of the screen is at or slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 45 to 110 cm (18 to 28 inches).
- Position the monitor to minimize glare and reflections on the screen from overhead lights and windows. You may want to use a tiltable monitor stand. The stand lets you set the monitor at the best angle for viewing, helping to reduce or eliminate glare from lighting sources you can't move.


Top of the screen at or slightly below eye level (You may need to adjust the height of your computer by placing something under it or by raising your work surface.)
Screen positioned to avoid reflected glare
Shoulders relaxed
Forearms and hands in a straight line
Forearms level or tilted up slightly
Thighs horizontal
Lower back supported
Feet flat on the floor

Avoiding fatigue

These tips will help you get the most out of your work sessions with the computer.

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing and keep your hands and fingers relaxed.
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

Important safety instructions

For your own safety and that of your equipment, always take the following precautions.

Position your computer so that the power plug is easily accessible. To shut off all power to the Macintosh Quadra 950, disconnect the power plug.

Disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh Quadra 950 is exposed to rain or any other excess moisture
- your Macintosh Quadra 950 has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh Quadra 950 needs service or repair
- you want to clean the case (use only the recommended procedure described below)

Be sure that you always do the following:

- Keep your Macintosh Quadra 950 away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect your Macintosh Quadra 950 from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your Macintosh Quadra 950 into a grounded outlet.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

▲ **Warning:** Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables. ▲

To clean the case, do the following:

1. **Disconnect the power plug. (Pull the plug, not the cord.)**
2. **Wipe the surfaces lightly with a clean, soft cloth dampened with water. (Do not use alcohol-based cleaning fluids because they can damage the computer's finish.)**

▲ **Warning:** If you have a problem with your computer and nothing presented in the manuals that came with the computer solves the problem, take the computer to your authorized Apple dealer or service provider. Attempting to repair the computer yourself may void the limited warranty. Contact your authorized Apple dealer or service provider for additional information about this or any other warranty question. ▲

What's next?

Your computer comes with a variety of training and reference materials. Depending on your computer experience and the way you use your computer, you may use all, some, or none of them.

If you know the Macintosh

If you are an experienced Macintosh user, you can start right now on your own work. If you have questions as you work, refer to the *Macintosh User's Guide*.

If you're new to the Macintosh

If you are a new user, begin the training provided with your Macintosh. Your training consists of two pieces:

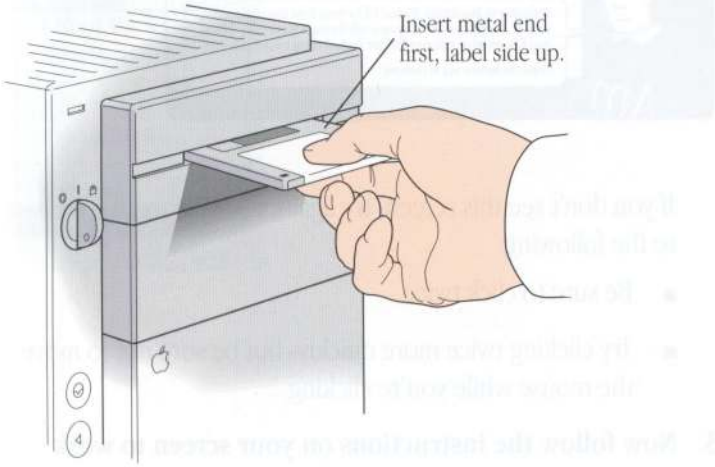
- the *Macintosh Basics* disk
- *Learning Macintosh,* Part I of your *Macintosh User's Guide*

You should first take the training provided on the *Macintosh Basics* disk and then work through the *Learning Macintosh* section to learn other skills.

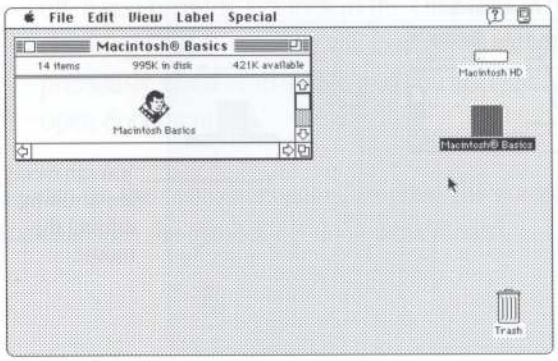
Learning the Basics

Follow these instructions to start the *Macintosh Basics* tour:

1. **Insert the *Macintosh Basics* disk into the disk drive, as shown.**

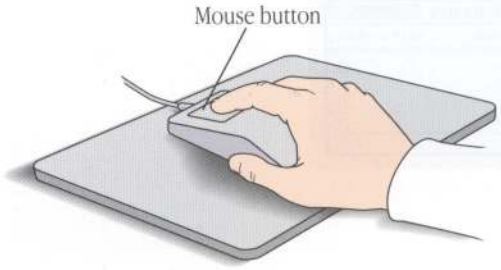


Your screen should look like this:



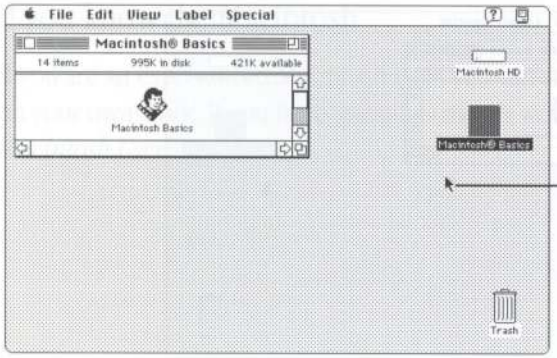
2. **Use the mouse to place the arrow on the picture that is labeled "Macintosh Basics."**

   Hold the mouse as shown, cable pointing away from you.



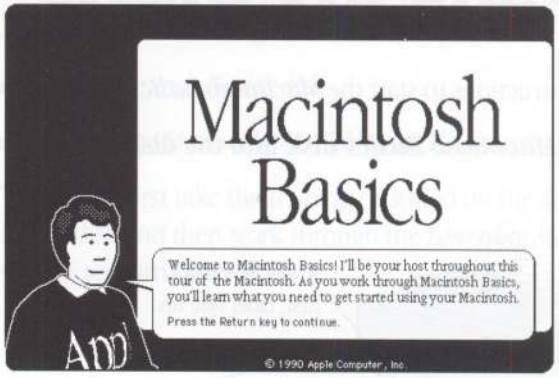
continues ▶

Move the mouse on a flat surface. Slide it so that it stays in contact with the tabletop. Notice that the arrow on the screen moves in the direction that you move the mouse. (If the arrow doesn't move on the screen, make sure that the cable connecting the mouse to the keyboard is secure.)



Move the mouse so that the tip of the arrow is inside the picture titled "Macintosh Basics." Then press the mouse button twice in quick succession.

After the second click, you should see the following screen:


Macintosh Basics
Welcome to Macintosh Basics! I'll be your host throughout this tour of the Macintosh. As you work through Macintosh Basics, you'll learn what you need to get started using your Macintosh.
Press the Return key to continue.
© 1990 Apple Computer, Inc.

If you don't see this screen, try again, paying special attention to the following:

- Be sure to click twice.
- Try clicking twice more quickly–but be sure not to move the mouse while you're clicking.

3. **Now follow the instructions on your screen to work through *Macintosh Basics*. When you have completed *Macintosh Basics*, turn to *Learning Macintosh*, Part I in your *Macintosh User's Guide*, to continue your training.**

Turning your computer off

If you plan to continue working, don't turn off your computer yet. When you are ready to stop working, follow these instructions:

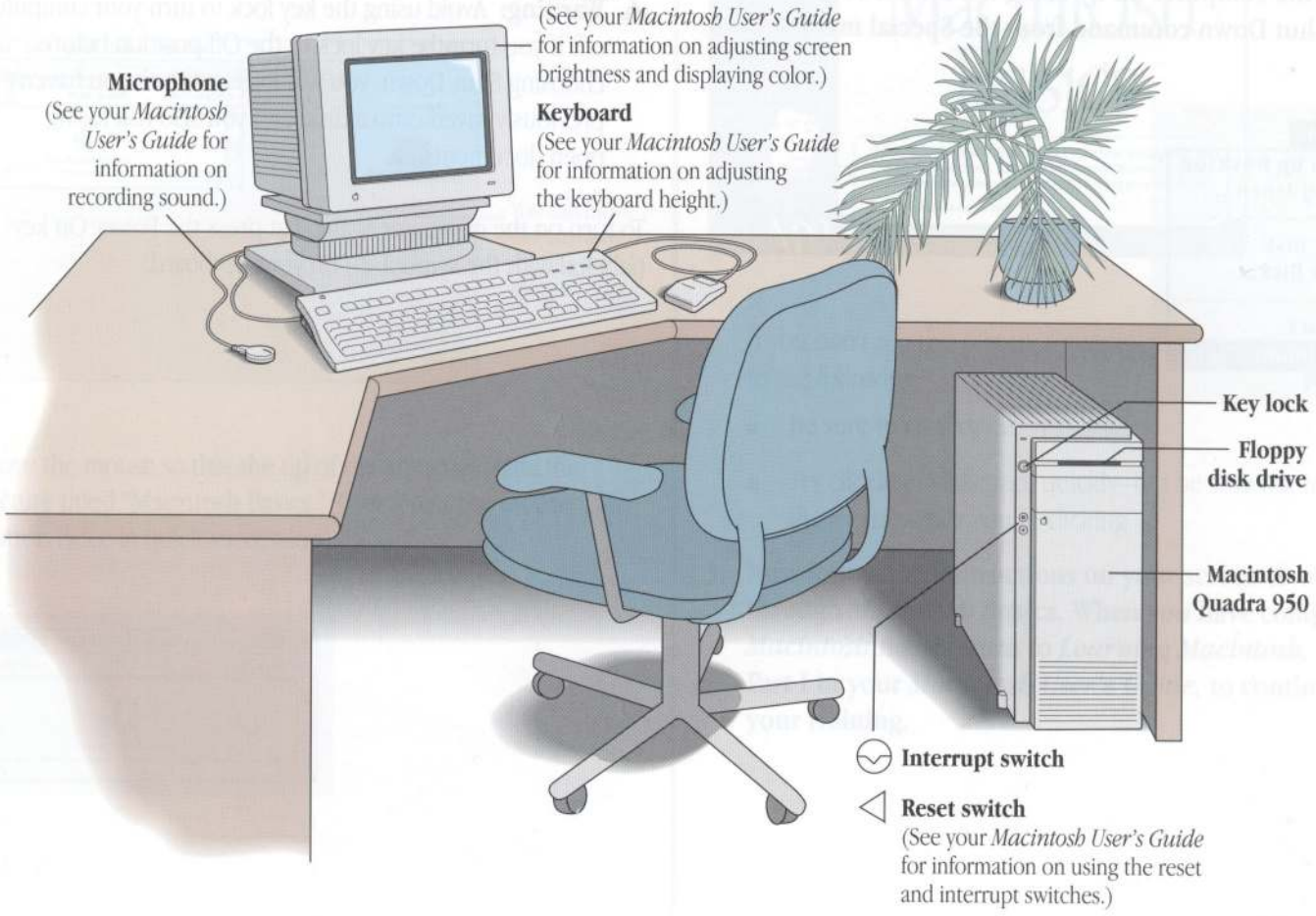
- **Turn the computer off by using the mouse to choose the Shut Down command from the Special menu.**

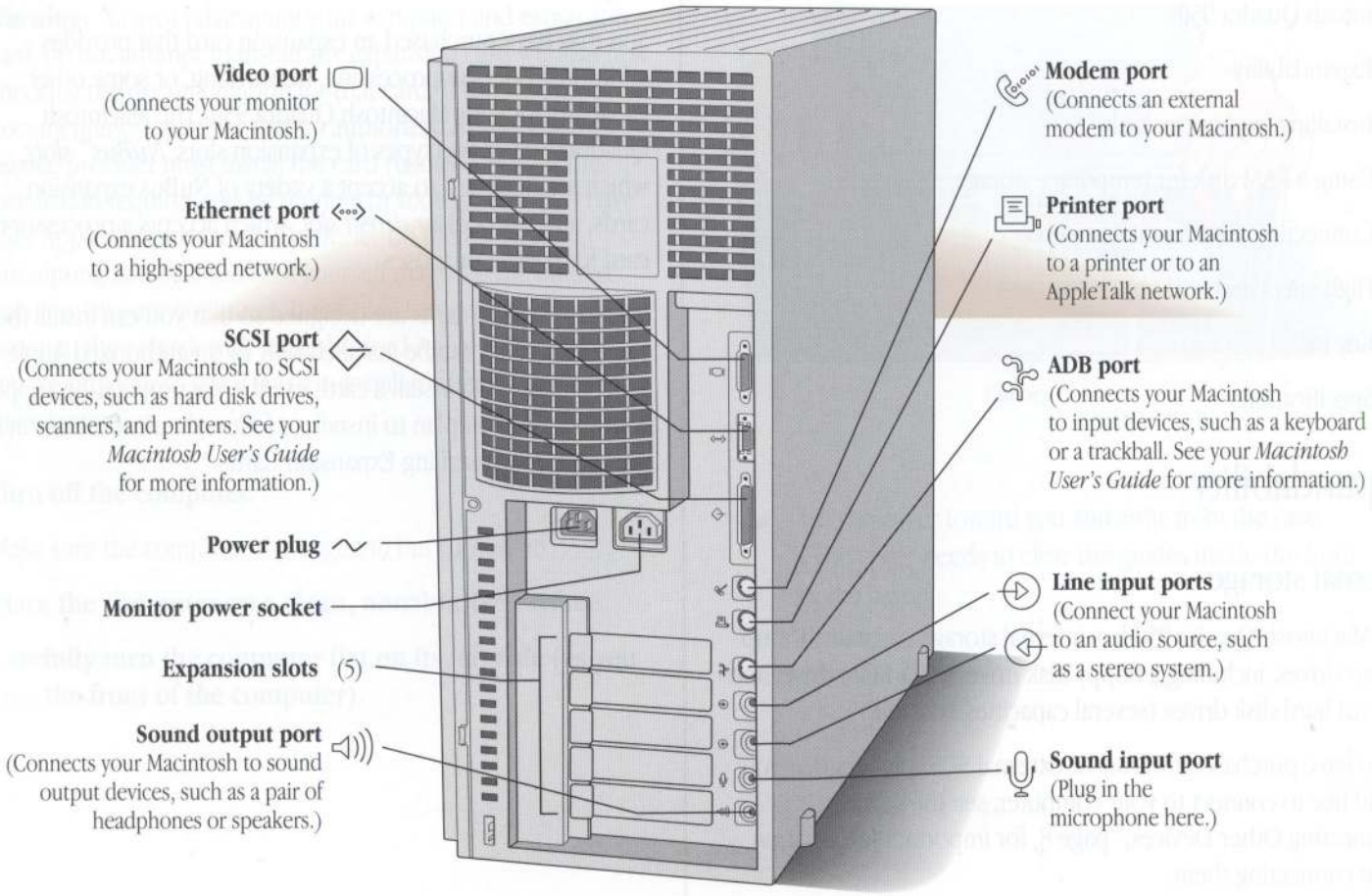
Choosing Shut Down prepares the hard disk for a fast restart the next time you turn on the computer. It also prompts you to save your work, if you haven't already done so, before turning the power off.

▲ **Warning:** Avoid using the key lock to turn your computer off. If you turn the key lock to the Off position before choosing Shut Down, you will lose any work you haven't previously saved onto a disk, and you also risk losing open documents. ▲

To turn on the computer again, just press the Power On key (labeled with the symbol ◁) on your keyboard.

Your Computer at a Glance


Monitor
(See your *Macintosh User's Guide* for information on adjusting screen brightness and displaying color.)
Keyboard
(See your *Macintosh User's Guide* for information on adjusting the keyboard height.)
Microphone
(See your *Macintosh User's Guide* for information on recording sound.)
Key lock
Floppy disk drive
Macintosh Quadra 950
Interrupt switch
Reset switch
(See your *Macintosh User's Guide* for information on using the reset and interrupt switches.)


Video port
(Connects your monitor to your Macintosh.)
Ethernet port
(Connects your Macintosh to a high-speed network.)
SCSI port
(Connects your Macintosh to SCSI devices, such as hard disk drives, scanners, and printers. See your *Macintosh User's Guide* for more information.)
Power plug
Monitor power socket
Expansion slots (5)
Sound output port
(Connects your Macintosh to sound output devices, such as a pair of headphones or speakers.)
Modem port
(Connects an external modem to your Macintosh.)
Printer port
(Connects your Macintosh to a printer or to an AppleTalk network.)
ADB port
(Connects your Macintosh to input devices, such as a keyboard or a trackball. See your *Macintosh User's Guide* for more information.)
Line input ports
(Connect your Macintosh to an audio source, such as a stereo system.)
Sound input port
(Plug in the microphone here.)

Technical Information

The following pages contain technical information about your Macintosh Quadra 950:

- Expandability
- Installing expansion cards
- Using a RAM disk for temporary storage
- Connecting another audio source
- High-speed networking
- Key lock
- Specifications

Expandability

Internal storage

The Macintosh Quadra 950 has internal storage capability for up to four drives, including a floppy disk drive, a CD-ROM drive, and internal hard disk drives (several capacities available).

If you have purchased internal or external SCSI devices that you would like to connect to your computer, see the section "Connecting Other Devices," page 8, for important information about connecting them.

Expansion slots

You may have purchased an expansion card that provides additional video, coprocessing, networking, or some other capability for your Macintosh Quadra 950. The Macintosh Quadra 950 has two types of expansion slots: *NuBus™ slots,* which are designed to accept a variety of NuBus expansion cards, and a *processor-direct slot,* which accepts a processor-direct card for special purposes.

Some expansion cards are designed so that you can install them yourself. Others can be installed only by an authorized Apple representative. To install a card, use the documentation supplied with the card you plan to install, or follow the instructions in the next section, "Installing Expansion Cards."

Installing expansion cards

If you have an expansion card, install it as described in this section.

▲ **Warning:** To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an authorized Apple dealer or service provider must install the card (usually because the installation requires special training or tools), be sure to have your Apple dealer or service provider do the installation. Attempting to install the card yourself may void the limited warranty on your computer. If the card is not an Apple-labeled product, then check with an authorized Apple dealer or service provider to see if you can install it without voiding the warranty. ▲

1. **Turn off the computer.**

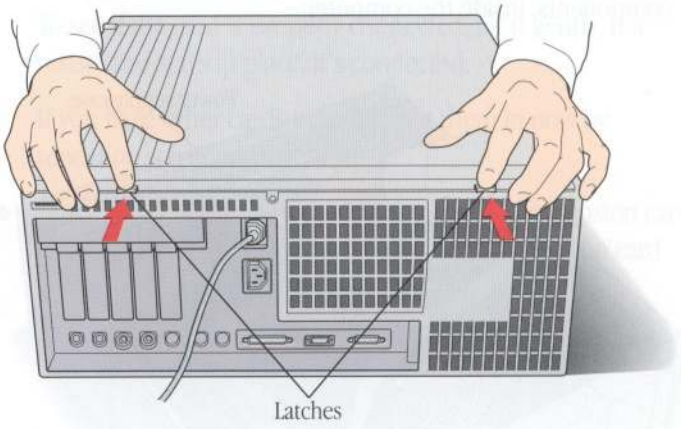
   Make sure the computer is plugged in but turned off.

2. **Place the computer on a clean, nonabrasive surface.**

3. **Carefully turn the computer flat on its left side (as you face the front of the computer).**

4. **Remove the cover from the computer.**

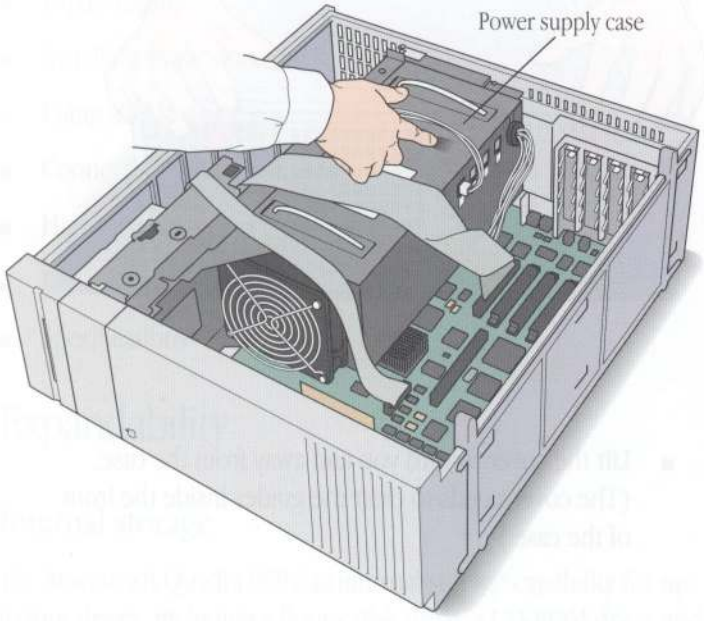
   - Press in on the two latches at the rear corners of the case and lift up on the back of the cover.



   - Lift the cover toward you and away from the case. (The cover needs to clear the guides inside the front of the case.)

5. **Touch the metal part of the power supply case inside the computer to discharge any static electricity that might be on your clothes or body.**

   Always do this before you touch any parts, or install components, inside the computer.

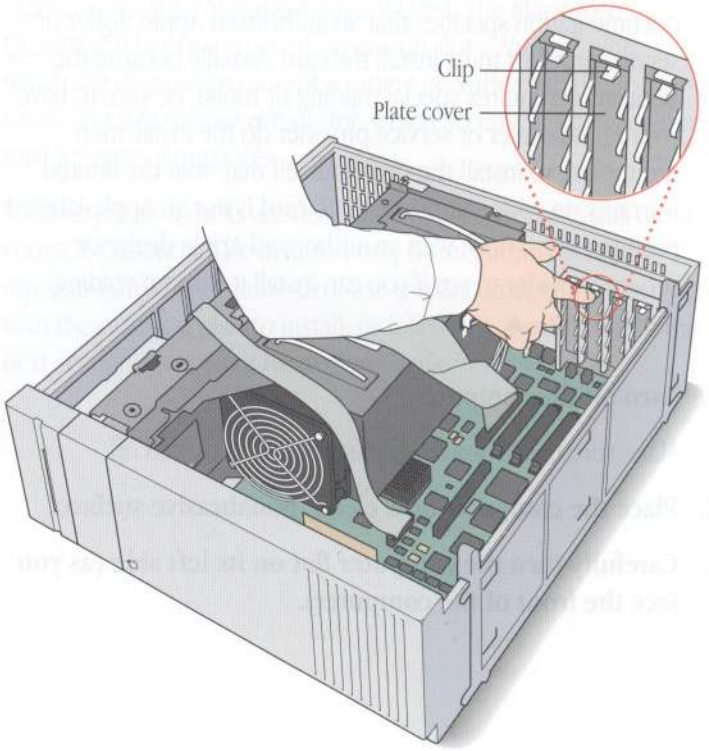


6. **Unplug the computer.**

   The computer should remain unplugged for the rest of the installation procedure.

7. **Push out the plastic cover plate behind the expansion slot you want to use (it doesn't matter which slot you choose), and set the cover plate aside.**

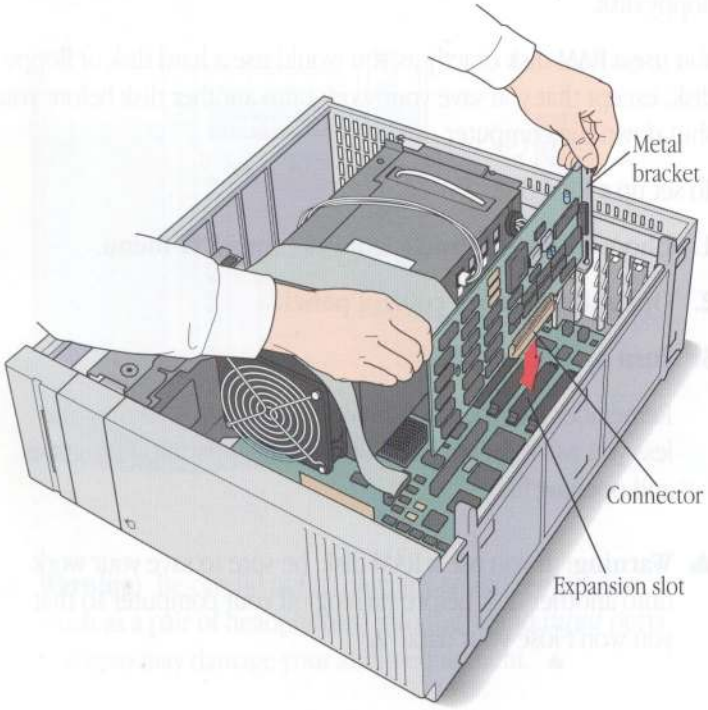
   Press down on the clip at the top of the cover plate to release the plate. If you have difficulty releasing the plate, use a screwdriver to press the clip.



8. **Remove the card from its static-proof bag.**

   Hold the card by its top edge to avoid touching the connector on the bottom of the card.

9. **Align the card over the expansion slot.**



10. **Press down firmly on the card until the connector is seated.**

    Don't force the card. If you meet a lot of resistance, pull it out and try again.

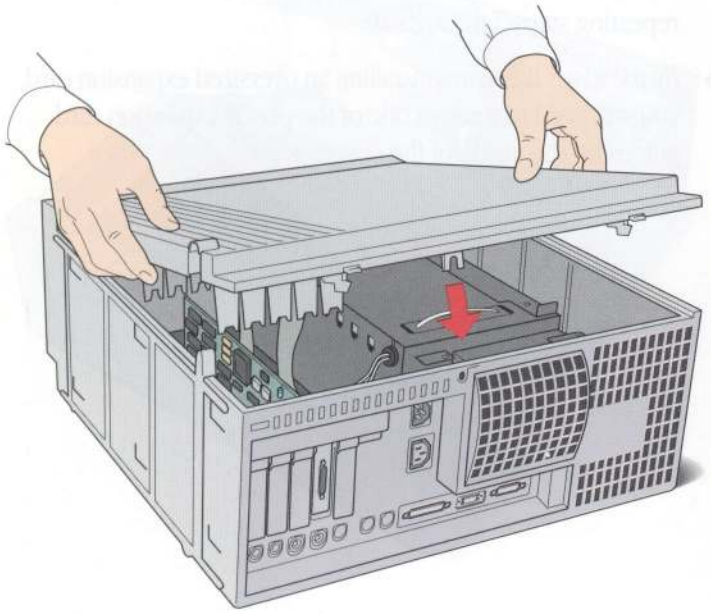
    To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.

    If you have other cards to install, put them in now by repeating steps 7 through 10.

❖ *By the way:* If you are installing an oversized expansion card, you will need to remove one of the plastic expansion card guides on the inside of the cover. ❖

11. Replace the cover on the computer.

- The front of the cover must align with the guides inside the case.
- Lower the back of the cover onto the case and press firmly on the back corners until you hear the rear latches snap into place.



12. Carefully return the computer to its vertical position.

Using a RAM disk for temporary storage

For improved performance, you may want to set aside part of your random-access memory (RAM) to use as a temporary hard disk. Using a RAM disk improves performance because the computer can get data from a RAM disk much faster than from a hard disk or floppy disk.

You use a RAM disk exactly as you would use a hard disk or floppy disk, except that you save your work onto another disk before you shut down the computer.

To set up a RAM disk:

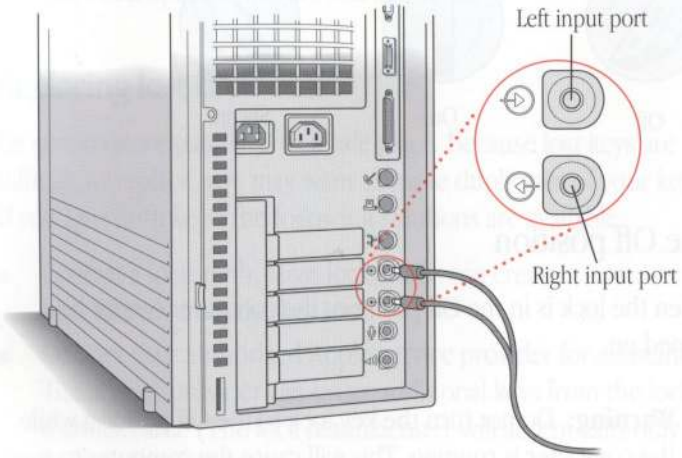
1. **Choose Control Panels from the Apple menu.**
2. **Open the Memory control panel.**
3. **Turn on the RAM disk.**

   Remember that the more RAM you allot as a RAM disk, the less you will have available for running application programs and opening files.

▲ **Warning:** If you use a RAM disk, be sure to save your work onto another disk before turning off your computer so that you won't lose your data. ▲

Connecting another audio source

You can record sounds from another audio source, such as a stereo system, by plugging the audio-out cables (from the source) into the line input ports ⊕⊕ on the back of your Macintosh Quadra 950.



▲ **Warning:** Be careful not to plug any sound *output* devices (such as a pair of headphones) into the sound *input* ports. Doing so may damage your audio equipment. ▲

Before you begin recording from an audio source, you need to change the input setting in the Sound control panel.

To change the input setting:

1. **Choose Control Panels from the Apple menu.**
2. **Open the Sound control panel.**
3. **Click the Options button.**
4. **Choose the External Audio input source.**
5. **Click OK.**

High-speed networking

The Macintosh Quadra 950 comes with built-in Apple Ethernet for connecting to high-speed Ethernet networks. With the appropriate Apple Ethernet media adapter (or other compatible media adapter), you can connect your Macintosh to an existing Ethernet network using thin coax, 10BASE-T twisted pair, thick coax, or other standard cables. (See your authorized Apple dealer for more information on Apple Ethernet media adapters for your Macintosh Quadra 950.)

To use built-in Ethernet, you need to change the network connection in the Network control panel. See the section "Selecting a Network Connection" in Chapter 13 of your *Macintosh User's Guide* for information on how to change the network connection.

△ **Important:** The built-in Ethernet capabilities of your Macintosh Quadra 950 allow you to connect to any standard Ethernet network. The built-in Ethernet supports EtherTalk Phase 2 (AppleTalk Phase 2 protocols for Ethernet networks). Apple and non-Apple products are also available that you can use to communicate over Ethernet using other protocols. The built-in Ethernet does not support EtherTalk Phase 1 (AppleTalk Phase 1 protocols for Ethernet networks). △

Key lock

The key lock allows you to secure your machine. There are three positions for the key lock: Off, On, and Secure.

The Off position

When the lock is in the Off position, the computer cannot be turned on.

▲ **Warning:** Do not turn the key lock to the Off position while the computer is running. This will cause the computer to turn off immediately, and all of your unsaved work will be lost. ▲

The On position

When the lock is in the On position, the computer can be turned on and off in the normal way (by pressing the Power On key on the keyboard and by choosing Shut Down from the Special menu).

The Secure position

When the lock is in the Secure position, the computer can be accessed by remote users and used as a server, but the keyboard and the floppy disk drive cannot be used.

▲ **Warning:** When the lock is in the Secure position, the reset and interrupt switches are still active. ▲

Replacing lost keys

Be sure to store your keys in a safe place. Because lost keys are difficult to replace, you may want to make duplicates of your keys. If you lose both keys, the following solutions are available:

- Contact a locksmith. Most locksmiths can create a new set of keys directly from the key lock.
- Contact your authorized Apple service provider for assistance. The service provider can order additional keys from the lock manufacturer. (The lock manufacturer will accept calls only from authorized Apple service providers.)
- As an alternative to ordering new keys, the service provider can replace the key lock on your computer and provide you with two new keys.

Specifications

These are the technical specifications of the Macintosh Quadra 950 computer.

Main Unit

Processor

- MC68040, 33 MHz clock frequency

Memory

- 4 or 8 megabytes (MB) of RAM, expandable to 64 MB using 4 MB SIMMS (Single In-line Memory Modules)
- 1 MB of ROM
- 256 bytes of parameter memory

Video RAM

- 1 MB video RAM, upgradable to 2 MB

Disk drives

- Built-in 1.4 MB high-density floppy disk drive
- Optional internal Apple SCSI hard disk drives (several capacities available)

Interfaces

- An Apple Desktop Bus (ADB) port for keyboard, mouse, and other devices using a low-speed, synchronous serial bus
- Two serial (RS-232/RS-422) ports, 230.4 Kbits per second maximum (up to 0.920 megabits per second if clocked externally)
- SCSI interface
- Video port to support RGB, monochrome, NTSC, and PAL monitors of various sizes and resolutions
- Five internal NuBus expansion slots
- One processor-direct expansion slot
- Sound output port capable of delivering sound to both channels of a stereo device
- Sound input port for microphone input
- Two line input ports
- AUI-I5 Ethernet connector

Input

- Line voltage: 100–240 volts ± 6% AC, RMS automatically configured
- Frequency: 50–60 Hz ± 3 Hz single phase
- Power: 300 watts maximum, not including monitor power

Output

- Output receptacle: 100–240 volts ± 6% AC, RMS automatically configured, 300 VA maximum

Clock/calendar

- CMOS custom chip with long-life lithium battery

Power supply

- 303 watts maximum

Current type	Total
+5 volt	33 amps
+12 volt	10 amps
–12 volt	1 amp
+5 trickle	1.25 amps

Monitors

Supports most Apple monitors, including:

- Macintosh 12" RGB Display
- Macintosh 12" Monochrome Display
- AppleColor High-Resolution RGB Monitor
- Macintosh 16" Color Display
- Apple Two-Page Monochrome Monitor
- Apple Macintosh Portrait Display
- Macintosh 21" Color Display

Other Apple and non-Apple monitors may also be supported (including VGA, S-VGA, NTSC, and PAL RGB monitors). See your authorized Apple dealer for details.

Keyboards

- Supports all ADB keyboards

Mouse

- ADB mouse

Apple Desktop Bus power requirements

- Maximum power draw for all ADB devices: 500 milliamps (mA)
- Mouse draws 80 mA
- Keyboard draws 25–80 mA (varies with the keyboard model used)

❖ *Note:* Up to three ADB devices can be daisy-chained to the ADB port. ❖

Microphone

The microphone is an electret type, omnidirectional microphone that is powered by the computer. Microphone output voltage is 4 millivolts (mV) peak to peak at normal speaking volume.

RAM configurations

RAM in the Macintosh Quadra 950 is provided in packages called Single In-line Memory Modules, or SIMMs. The SIMMs contain dynamic RAM chips on a single circuit board, with electrical contacts that plug into the SIMM sockets on the computer's logic board.

Macintosh Quadra 950 computers can work with any of several RAM configurations, depending on the density of the RAM chips that are mounted on the SIMMs. The Macintosh Quadra 950 can use 1 MB or 4 MB RAM SIMMs. Do not purchase 256K SIMMs for use with the Macintosh Quadra 950.

△ **Important:** Macintosh Quadra 950 SIMMs should be fast-paged mode 80 nanosecond (ns) RAM access time or faster. The slower 120 ns and 150 ns SIMMs available for some other models of Macintosh computers will not work in the Macintosh Quadra 950. See your authorized Apple dealer for the correct SIMMs. △

▲ **Warning:** Do not attempt to install additional RAM yourself. Doing so will void the limited warranty on your computer. See your authorized Apple dealer or service provider for additional information about this or any other warranty question. ▲

Video RAM configurations

The Macintosh Quadra 950 comes with video support built into the main logic board and 1 MB of video RAM (VRAM). The Macintosh Quadra 950 can support up to 2 MB of VRAM. You may want to add more VRAM to display more colors or shades of gray.

△ **Important:** Macintosh Quadra 950 video RAM SIMMs should be 80 nanosecond (ns) RAM access time or faster. The slower 100 ns SIMMs available for Macintosh Quadra 700 and 900 computers will not work in the Macintosh Quadra 950. See your authorized Apple dealer for the correct SIMMs. △

▲ **Warning:** Do not attempt to install additional VRAM SIMMs yourself. Doing so will void the warranty on your computer. See your authorized Apple dealer or service provider. ▲

The following table shows the number of colors or shades of gray your Macintosh Quadra 950 can display with different VRAM configurations. (See your Apple dealer for more information about adding VRAM.)

Number of colors supported

Monitor	1 MB VRAM	2 MB VRAM
12" B/W Hi-Res	256 grays	256 grays
12" RGB	millions	millions
13" RGB Hi-Res	thousands	millions
Portrait	256 grays	256 grays
16" Color	thousands	millions
19" Color	256	thousands
Two-Page	256 grays	256 grays
21" Color	256	thousands
VGA	thousands	millions
Super VGA	thousands	millions
NTSC	thousands	millions
NTSC convolution	256	256
PAL	thousands	millions
PAL convolution	256	256

For information on how to change the number of colors or shades of gray displayed on your monitor, see your *Macintosh User's Guide.*

Size and weight

Weight	Height	Width	Depth
Main unit			
16.7 kg*	473 mm	224 mm	523 mm
36 lbs. 12 oz.*	18.6 in.	8.9 in.	20.6 in.
Mouse			
0.17 kg	27.9 mm	53.3 mm	96.5 mm
6 oz.	1.1 in.	2.1 in.	3.8 in.
Keyboard**			
1–2 kg	44–60 mm	418–490 mm	142–190 mm
2–4.5 lb.	1.8–2.5 in.	16.5–19.5 in.	5.6–7.5 in.

*Weight varies with disk drives installed.
**Keyboard size and weight vary with model selected.

Environment

Operating temperature

- 10° C to 40° C (50° F to 104° F)

Storage temperature

- –40° C to 47° C (–40° F to 116.6° F)

Relative humidity

- 20% to 80% (noncondensing)

Altitude

- 0 to 3048 m (0 to 10,000 ft.)

The Apple Publishing System

This Apple manual was written and edited on a desktop publishing system using Apple Macintosh computers. Proof pages were created on Apple LaserWriter printers and on the QMS ColorScript 100 color printer. Final pages were produced in QuarkXPress and output directly to separated film on a Dolev PS imagesetter. Line art was created with Adobe Illustrator. Screen shots were created and modified with system software, Exposure, and SuperPaint.

Text type is Apple's corporate font, a condensed version of Garamond. Ornaments are ITC Zapf Dingbats® and custom symbols designed for Apple Computer. Some elements, such as computer voice, are set in Apple Courier, a fixed-width font.

PostScript®, the LaserWriter page-description language, was developed by Adobe Systems Incorporated.

Keep this book for future reference

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